

WORLDWIDE EMERGING ENVIRONMENTAL ISSUES AFFECTING THE U.S. MILITARY
Contract No: DAAD19-02-D-0001/ Delivery Order 0456 with Battelle Columbus Operations for the U.S. Army
Environmental Policy Institute

SEPTEMBER 2007 REPORT

Note to Readers: Pages 1-14 comprise the summary and analysis of this report. Expanded details for some items are in the Appendix beginning on page 15.

Item 1. UN General Assembly Focuses Government Leaders on Climate Change.....	1
Item 2. Maritime Regulations to be Expanded.....	1
2.1 Anti-Fouling Systems on Ships Convention to Enter into Force in September 2008.....	1
2.2 Shipping to Face New Regulations to Reduce Air Pollution.....	2
2.3 Micronesian Nations Sign Coral Reef Protection Document.....	3
2.4 Shipping Regulations for Protecting Whales.....	3
2.5 Baltic Ministers Recommend Additions to Baltic Sea Action Plan.....	4
Item 3. Environment and Security Program in the East-Caspian Region.....	4
Item 4. Technological Breakthroughs with Environmental Security Implications.....	5
4.1 Millimeter-wave Spectroscopy Provides Environmental Sensing.....	5
4.2 New Chemical Helps Protect Burned-over Soil from Erosion.....	5
Item 5. Updates on Previously Identified Issues.....	5
5.1 Nuclear Safety.....	5
5.1.1 IAEA to Upgrade International Nuclear Event Scale.....	5
5.1.2 Progress on the Nuclear-Test-Ban Treaty.....	6
5.1.3 Nuclear Disarmament.....	6
5.1.4 IAEA Director's Recommendations to Improve Nuclear Safety.....	6
5.1.5 Recent Reports Addressing Nuclear Safety.....	6
5.2 Call for Expanding Montreal Protocol on Ozone-Depleting Substances.....	7
5.3 Canada to Begin Monitoring Traffic in Northwest Passage by mid-2008.....	7
5.4 Climate Change.....	8
5.4.1 Intensified Disasters.....	8
5.4.2 Melting Glaciers and Sea Ice.....	8
5.4.3 Rising Sea Levels.....	9
5.4.4 Adaptation.....	9
5.4.5 Migration.....	9
5.4.6 Post-Kyoto Negotiations.....	9
5.5 UNESCO Added 23 New Reserve Sites in 18 Countries.....	10
5.6 Nanotechnology Safety Issues.....	11
Item 6. Reports Suggested for Review.....	12
6.1 IISS's Strategic Survey 2007 Warns of Global Security Implications of Climate Change...	12
6.2 Trends of Energy Use in IEA Countries.....	12
6.3 U.S. Climate Change Science Program Progress Assessment.....	12
6.4 Calendar with Environmental Deadlines Compliance.....	13
Item 7. Other Environment-related Developments.....	13
7.1 US EPA recommendations for "Green Infrastructure".....	13
7.2 NATO funds Environmental Security for Transition Countries' Universities.....	13
7.3 Environmental security among top three priorities in Australia-China talks.....	14
Appendix.....	15

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE SEP 2007		2. REPORT TYPE		3. DATES COVERED 00-00-2007 to 00-00-2007	
4. TITLE AND SUBTITLE Worldwide Emerging Environmental Issues Affecting the U.S. Military. September 2007				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) The Millennium Project ,4421 Garrison Street, N.W. ,Washington,DC,20016-4055				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 18	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

Item 1. UN General Assembly Focuses Government Leaders on Climate Change

The theme of the 62nd session of the UN General Assembly was “Responding to Climate Change.” Speeches by heads of state and governments talked about climate change, rising sea levels, droughts and floods—as issues in themselves, but also as related to poverty and social problems, and ultimately to global security. There was again mention of strengthening the UNEP by transforming it into a UN Environmental Organization. This annual General Assembly was preceded by a high-level meeting convened by the UN Secretary General focusing specifically on climate change and actions to address it. Prior to this meeting was the annual UN-NGO conference that also focused on climate change. These meetings demonstrated a near consensus that urgent action is necessary, and that the UN Framework for Climate Change is the appropriate forum for discussions. The President of the UN General Assembly is preparing to create a Global Compact on Climate Change tentatively planned for release in early 2008 from which many agreements could flow. All of this focuses on the next high-level meeting on climate change to be held in December, in Bali, Indonesia.

Military Implications:

The military should bring together information on all its efforts to reduce climate change and its capacities to anticipate and respond to the effects of climate change (e.g., an executive information system) for continual review and improvement. This would be in anticipation for higher-level requests.

Sources:

UN General Assembly—General Debate (25 September - 3 October 2007); Statements and Webcast <http://www.un.org/webcast/ga/62/>

Ban Ki-Moon Convenes Largest-Ever Meeting Of Global Leaders On Climate Change <http://www.un.org/apps/news/story.asp?NewsID=23926&Cr=climate&Cr1=change>

As the waters rise

http://www.economist.com/world/international/displaystory.cfm?story_id=9867337

President of the UN General Assembly’s comments during private briefing by the director of the Millennium Project (Glenn jglenn@igc.org)

Item 2. Maritime Regulations to be Expanded

2.1 Anti-Fouling Systems on Ships Convention to Enter into Force in September 2008

The International Convention on the Control of Harmful Anti-Fouling Systems on Ships (AFS Convention) will enter into force on September 17, 2008 (12 months after fulfilling the criteria for entry-into-force.) The AFS Convention bans the use of organotin compounds on ships’ hulls or external surfaces, requires the application of an isolating coating for ships already carrying such compounds, and establishes a mechanism to assess other anti-fouling systems to prevent the use of potentially harmful substances in these systems. The Convention will apply to all ships and floating units operating under the flag of a Party to the Convention and/or entering the port, shipyard, or offshore terminal of a Party.

Military Implications:

The US is not Party to the AFS Convention, but, since there are no exemption stipulations, relevant military personnel should review the implications for military vessels' compliance with the Convention's requirements when entering waters of a State Party to the AFS Convention.

Sources:

Harmful ships' paint systems to be outlawed as international convention meets entry-into-force criteria

http://www.imo.org/Newsroom/mainframe.asp?topic_id=1472&doc_id=8473

International Convention on the Control of Harmful Anti-fouling Systems on Ships

http://www.imo.org/Conventions/mainframe.asp?topic_id=529

2.2 Shipping to Face New Regulations to Reduce Air Pollution

Concerns over air pollution by marine navigation are rising and, similarly to the aviation industry, it is likely that the shipping industry will one day be held responsible and asked to act on its GHG emissions. Given the industry's global extent, global regulations are needed and expected. The International Maritime Organization (IMO) launched in July a comprehensive study to assess the shipping industry's contribution to CO₂, sulfur dioxide, toxic nitrous oxide, and particulate emissions, and the impacts on air quality. Results are expected by the end of this year. Along the same lines, the theme of World Maritime Day 2007 was "IMO's response to current environmental challenges" in order to enhance awareness of the industry's environmental impact, and trigger compelling action.

Note: This month, Friends of the Earth sued the U.S. EPA in federal district court for failing to meet the April 2007 deadline to regulate air pollution from large ships. Meanwhile, the Marine Vessel Emissions Act of 2007—that would require cleaner fuels and engines in all ocean-going vessels calling at U.S. ports—was introduced in the Senate (SB 1499) and the House of Representatives (HR 2548).

Military Implications:

It is likely that the IMO assessment and increasing pressure from environmental groups, and even political agents, will trigger regulations on pollution generated by the shipping industry. The military should seek to use the most environment-friendly technologies in order to reduce its pollution and also should be prepared for eventual new regulations.

Sources:

Shipping must act on air emissions

<http://www.reuters.com/article/tnBasicIndustries-SP/idUSL1286905420070913>

Curbing ship emissions seen needing global rules

<http://uk.reuters.com/article/environmentNews/idUKL0754092020070907>

World Maritime Day 2007. IMO's response to current environmental challenges. A message from the Secretary-General of the International Maritime Organization, Mr. Efthimios E. Mitropoulos

http://www.imo.org/includes/blastDataOnly.asp/data_id%3D19507/9535.pdf

World Maritime Day http://www.imo.org/home.asp?topic_id=320

EPA Hauled into Court over Ship Smokestack Pollution

<http://www.ens-newswire.com/ens/sep2007/2007-09-07-091.asp>

2.3 Micronesian Nations Sign Coral Reef Protection Document

The presidents of Palau, Micronesia, and the Marshall Islands became the first heads of state to sign the International Declaration of Reef Rights, created by the Reef Check Foundation to raise awareness about the value of coral reefs and how to protect them. 2008 is the International Year of the Reef.

Military Implications:

Activities associated with the coming International Year of the Reef are likely to encourage other countries to accede to the Declaration. Relevant military personnel, especially in the western Pacific, should review the Declaration and consider new actions to help preserve these fragile and internationally valued environmental features. Over-the-shore training and operations are likely to be affected, as awareness and regulatory efforts develop. Joint and Service guidance could eventually require changes.

Sources:

Three Presidents of Micronesian Nations Sign Reef Check 'International Declaration of Reef Rights' - Pledge to Protect Coral Reefs

http://www.enn.com/press_releases/2153

Reef Check's International Declaration of Reef Rights Receives Presidential Attention

http://www.reefcheck.org/news/news_detail.php?id=252

2.4 Shipping Regulations for Protecting Whales

Transport Canada, Environment Canada, and a group of marine mammal researchers submitted a proposal to the IMO calling for diversion of large vessels in the Roseway Basin (southwest of Nova Scotia) to protect the endangered North Atlantic right whale. Several right whales are killed annually by collisions with large ships. The ban would prohibit shipping traffic in a 1,780 square kilometer area around Roseway Basin. Also to protect the North Atlantic right whale, the U.S. Fisheries Service proposed speed limits on the east coast. Similarly, a petition by the U.S. Center for Biological Diversity calls upon the National Marine Fisheries Service to protect endangered blue whales by setting a speed limit of 10 knots in the Santa Barbara Channel (California) for vessels 65 feet or larger while whales are in the area.

Military Implications:

Military involved in maritime operations should plan and conduct enhanced vigilance in areas with special ecological features and be prepared to comply with increasing maritime protection regulations.

Sources:

Cdn proposal would divert ships from right whale conservation area

<http://cnews.canoe.ca/CNEWS/Canada/2007/09/02/4465625-cp.html>

Shipping Lanes Into Boston Moved To Protect Whales

http://www.enn.com/top_stories/article/6841

Petition Seeks Ship Speed Limits in Santa Barbara Channel to Stop Blue Whale Killing

http://www.enn.com/press_releases/2167

2.5 Baltic Ministers Recommend Additions to Baltic Sea Action Plan

The meeting of the environment ministers of the Nordic countries (Denmark, Finland, Iceland, Norway, and Sweden), held in Finland at the end of August, focused on the condition of the Baltic, the Nordic countries' actions on climate change, and the future of international environment management (including the Nordic initiative to strengthen UNEP.) The ministers called for tangible measures to protect the Baltic Sea (e.g., a ceiling on emissions of nutrients) and their inclusion in the Baltic Sea Action Plan (BSAP) due to be approved by the Baltic nations environment ministers at the meeting of the Helsinki Commission for the Protection of the Baltic Sea Environment (HELCOM) to be held on November 15, in Krakow, Poland.

Military Implications:

Military representatives should follow these developments to assess their possible effect on operations in the Baltic region.

Sources:

Baltic ministers call for ambitious Baltic plan

<http://www.planet2025news.net/ntext.rxml?id=4909&photo=>

Baltic Sea Action Plan

http://www.helcom.fi/press_office/news_helcom/en_GB/HODS17Outcome1/

Item 3. Environment and Security Program in the East-Caspian Region

The regional meeting of the Environment and Security (ENSVEC) Program in the East-Caspian region was held in Ashgabat, Turkmenistan, and was attended by leading specialists from Kazakhstan, Kyrgyzstan, Uzbekistan, Turkmenistan, Russia, Italy, Iran, and Afghanistan, as well as representatives of OSCE, NATO, UNEP and UNDP. In the framework of implementation of the ENSVEC program for environmental protection and cooperation in the region, the focus was on the East-Caspian Sea's coastal area development, pollution reduction, and ecological preservation and restoration. The start of the ENSVEC program in the Atyrau and Mangistau oblasts of Kazakhstan and Turkmenistan was also announced. The Central Asia ENSVEC program priority regions include: the Fergana Valley, the Caspian Sea's Eastern Coast, the Semipalatinsk Nuclear Ground, the Amu-Darya river basin, and the Aral Sea.

Military Implications:

CENTCOM and military stationed in the East Caspian region should consider the ENSVEC priorities in their planning and actions, adjust the regional engagement plan accordingly, and also offer support to their counterparts to improve environmental aspects of military operations in the framework of the ENSVEC program.

Sources:

Environment and Security program meeting held Ashgabat

http://www.turkmenistan.ru/?page_id=3&lang_id=en&elem_id=11050&type=event&sort=date_desc

Environment and Security; Transforming risks into cooperation

<http://www.envsec.org/centasia/index.php>

Item 4. Technological Breakthroughs with Environmental Security Implications

4.1 Millimeter-wave Spectroscopy Provides Environmental Sensing

Scientists from the Argonne National Laboratory developed a new technology, passive millimeter-wave spectroscopy (PmmWS), which can detect specific molecules in concentrations as low as 100-1000 ppm at ranges of up to a few kilometers. The new system improves on earlier ones by being less susceptible to interference from clouds and other atmospheric phenomena, having a much longer range, and being less expensive.

Military Implications:

The military should investigate this technique for its applications in battlefield management, environmental surveillance and cleanup.

Source:

New instrument covertly detects signals from illicit chemicals

<http://www.physorg.com/news108047021.html>

4.2 New Chemical Helps Protect Burned-over Soil from Erosion

ENCAP of Green Bay WI, a lawn care small business, introduced a new product, PAM-12, that claimed to be more effective and less costly in treating flame- and smoke-damaged soil than previous approaches so that it becomes more absorbent and less susceptible to erosion. It does this by causing the soil to form into tiny clumps around which water will flow instead of running off, aiding in the process of restoring the natural environment for vegetation re-growth.

Military Implications:

The military should investigate this material as an aid in environmental restoration after training exercises, conflict, and natural and accidental fires.

Sources:

PAM-12 Erosion Granules

<http://www.encap.net/ProductGuide/PAM12ErosionGranules/tabid/79/Default.aspx>

Product Could Heal Soil After Fires

<http://www.physorg.com/news107534416.html>

Item 5. Updates on Previously Identified Issues

5.1 Nuclear Safety

5.1.1 IAEA to Upgrade International Nuclear Event Scale

The International Atomic Energy Agency (IAEA) will upgrade the International Nuclear Event Scale (INES) system to enhance international safety by promptly informing the public on the scale of a nuclear or radiological incident. The improvements will make the system more versatile and informative, the terminology will be standardized, and issues related to sources and transportation of radioactive material will be better addressed. The INES was originally developed in the 1990s by the UN IAEA and the Nuclear Energy Agency of the OECD to consistently communicate the severity of reported nuclear and radiological events, with a scale ranging from 1 (anomaly) to 7 (major accident). The updated scale is expected to be issued at the end of 2008, after being reviewed by INES members.

5.1.2 Progress on the Nuclear-Test-Ban Treaty

The 5th Conference on Facilitating the Entry into Force of the Comprehensive Nuclear-Test-Ban Treaty applauded progress made by the Treaty's Preparatory Commission in preparing to establish the future CTBT Organization and the Treaty's verification regime. It also called on the ten states of Annex 2 whose ratification is essential for the treaty's entry into force to do so. These countries are China, U.S., Democratic People's Republic of Korea, India, Pakistan, Egypt, Israel, Indonesia, Iran and Colombia. [See also *Call for Comprehensive Nuclear-Test-Ban Treaty Entry into Force* in September 2004 and other related items in previous environmental security reports.]

5.1.3 Nuclear Disarmament

'The Challenge of Abolishing Nuclear Weapons' conference discussed a variety of measures to eliminate the threat of nuclear weapons. Emphasis was on a Nuclear Weapons Convention, a draft of which (created by civil society organizations) was already submitted to the UN by Costa Rica. Along the same lines, nuclear experts attending the Pugwash 50th Anniversary workshop 'Revitalizing Nuclear Disarmament' discussed actions that both nuclear and non-nuclear states should take in order to further the goal of declaring nuclear weapons illegal and eliminating them entirely.

5.1.4 IAEA Director's Recommendations to Improve Nuclear Safety

At the IAEA's 51st annual General Conference held in Vienna, Director General Mohamed ElBaradei called on all countries to ratify the Amendment on the Physical Protection of Nuclear Material of the International Convention on the Suppression of Acts of Nuclear Terrorism, to strengthen the protection of nuclear materials and increase nuclear security. In the meantime, experts attending the scientific forum convened by the IAEA's 'Global Challenges and the Development of Atomic Energy: The Next 25 Years' noted that in view of the world's energy needs' likely to increase by 50% over the next 25 years, nuclear technology is expected to expand, increasing the risks associated with the spread of sensitive nuclear know-how, including enrichment and reprocessing technologies. [See also *Increasing Nuclear Safety and Security* in March 2006 and other related items in previous environmental security reports.]

5.1.5 Recent Reports Addressing Nuclear Safety

Nuclear Security Report 2007; Measures to Protect Against Nuclear Terrorism outlines concerns and strategies to consider in order to improve international nuclear security, mainly based on international collaboration. *Securing the Bomb 2007*, commissioned by the Nuclear Threat Initiative, provides a comprehensive assessment of vulnerable nuclear stockpiles around the world and makes recommendations for reducing the nuclear terrorism threat, including establishing a database with unclassified information on actual nuclear incidents. *IAEA Illicit Trafficking Database* reveals that in the period 1993–2006, the agency confirmed 275 cases of illicit possession and connected activities involving nuclear materials and radioactive sources.

Military Implication:

If not already part of the process, relevant military personnel should seek to be involved in the upgrade and revision of the new INES system. It should also be completely informed about the new scales, terminology and strategies put forward by the updated system. Also, the other recent reports might provide input for reducing nuclear terrorism risks.

Sources: [more expended list in the [Appendix](#)]

Improving the INES Scale <http://www.iaea.org/NewsCenter/News/2007/ines.html>

International Experts Explore Challenge of Abolishing Nuclear Weapons

http://www.wagingpeace.org/menu/programs/public-events/other/conf_challenge_2007_09_08.htm

Statement to the Fifty-First Regular Session of the IAEA General Conference 2007 by IAEA Director General Dr. Mohamed ElBaradei

<http://www.iaea.org/NewsCenter/Statements/2007/ebsp2007n014.html>

Secretary-General, in message, calls for rededication to 'noble work' of bringing Nuclear-test-ban into force

<http://www.un.org/News/Press/docs/2007/sgsm11157.doc.htm>

Scientific Forum. Global Challenges and the Development of Atomic Energy: The Next 25 Years

<http://www.iaea.org/About/Policy/GC/GC51/ScientificForum>

Securing the Bomb 2007 http://www.nti.org/e_research/securingthebomb07.pdf

IAEA Illicit Trafficking Database Releases Latest Aggregate Statistics

<http://www.iaea.org/NewsCenter/News/2007/itdb.html>

5.2 Call for Expanding Montreal Protocol on Ozone-Depleting Substances

On the 20th anniversary of the Montreal Protocol to curb the release of harmful substances into the atmosphere, 191 signatories of the Protocol gathered in Montreal to celebrate this highly successful international treaty and to discuss its expansion. Delegates agreed to accelerate the freeze and phase-out of hydrochlorofluorocarbons (HCFCs)— chemical compounds used in refrigeration systems and air conditioners, and which accelerate both ozone layer damage and climate change. They agreed to halt the production of HCFCs in 2013 and pull forward their elimination by ten years from the previous scheduled phase-out of 2030 for developed countries, and 2040 for developing ones. The United Nations meteorological agency revealed that greenhouse gases could aggravate ozone loss and slow recovery. The theme of this year's Ozone Day (September 16) was "Celebrating 20 years of progress in 2007". [See also 2007—*The International Year of the Ozone Layer* in January 2007, *Ozone Hole Worst Ever Recorded* (under Climate Change item) in October 2006, and other similar items in previous environmental security reports.]

Military Implications:

The Military and its developers and contractors should prepare to comply with the new HCFCs phase-out schedule.

Sources:

Secretary-General lauds push to hasten phase-out of ozone-depleting compounds

<http://www.un.org/apps/news/story.asp?NewsID=23939&Cr=climate&Cr1=change>

Ozone Treaty's Role in Combating Climate Change Tops Environment Ministers Meeting in Canada

<http://www.ec.gc.ca/default.asp?lang=En&xml=AB3B558A-48EF-4E3B-83FA-BDAA2B7D76AF>

Greenhouse gases could aggravate ozone loss and slow recovery, UN agency says

<http://www.un.org/apps/news/story.asp?NewsID=23827&Cr=ozone&Cr1=>

UN-backed conference ends with push to protect ozone, combat climate change

<http://www.un.org/apps/news/story.asp?NewsID=23918&Cr=climate&Cr1=change>

Ozone Day- 16 September http://ozone.unep.org/Events/ozone_day_2007/index.shtml

5.3 Canada to Begin Monitoring Traffic in Northwest Passage by mid-2008

In view of increasing disputes over the Northwest Passage, Canada announced that it will begin monitoring the area's sea traffic by underwater listening devices. Beginning in mid-2008, Canada's military will monitor ships and submarines using detection technology installed at Gascoyne Inlet on Devon Island, near one of the main arteries of the passage. Canada is at odds

with Russia, Denmark, Norway and the United States over the Northwest Passage. [See also *Arctic Debate Intensifies* in August 2007, *Arctic Access, Territorial Claims, Energy Resources and Environmental Management* in July 2007, and other items on the same issue in previous environmental security reports]

Military Implications:

[Similar to previous articles on the same issue] It is likely that discussions for clear international regulations concerning the Arctic region will increase rapidly, opening the potential for new military roles in the region to ensure the safety of individuals and ecosystems. Relevant military personnel should cooperate with their counterparts in other countries and international organizations in developing timely, adequate national and international regulations and enforcement procedures regarding the Arctic.

Sources:

Canada to monitor water traffic in Northwest Passage

<http://www.cbc.ca/canada/north/story/2007/09/24/technology-passage.html>

The True North ... strong, but whose?

<http://www.hfxnews.ca/index.cfm?sid=65248&sc=93>

Canada to be forced to boost Arctic security, expert says

<http://www.canada.com/ottawacitizen/story.html?id=66c15321-ea0c-4e04-a686-b9ae5f644394&k=64697>

Fight for the Top of the World

<http://www.time.com/time/world/article/0,8599,1663445,00.html>

Satellites witness lowest Arctic ice coverage in history

http://www.esa.int/esaEO/SEMYTC13J6F_planet_0.html

5.4 Climate Change

5.4.1 Intensified Disasters

In Africa, the worst rains in 30 years caused flooding affecting an estimated 1.5 million people in 22 countries, including Ethiopia, Niger and Sudan, increasing the humanitarian crisis, reports the UN Office for the Coordination of Humanitarian Affairs (OCHA). Hundreds of thousands of people have been displaced and the risks of epidemics are rising. In other parts of the world, strong hurricanes also produced serious damages during September.

5.4.2 Melting Glaciers and Sea Ice

This year, the area covered by sea ice in the Arctic shrank to its lowest level since satellite measurements began nearly 30 years ago. The U.S. National Snow and Ice Data Center noted that on Sept. 16, 2007, the Arctic sea ice reached a record low 4.13 million square kilometers (1.59 million square miles), 22% less than the previous record. Himalayan glaciers are melting fast in Indian Kashmir as a result of global warming, noted a report by ActionAid, *On the Brink?* Himalayan glaciers are the main source for Asia's nine largest rivers; water levels of regional streams and rivers already dropped by two-thirds. Rajendra K. Pachauri, the Chair of the UN Intergovernmental Panel on Climate Change, warned that some one billion people could be threatened by water shortage in South Asia, China and Africa as result of melting glaciers.

5.4.3 Rising Sea Levels

At recent UN meetings, low-lying states reiterated their call for increased action against global warming. The small island-state of Tuvalu could disappear in 30 to 50 years. Increased salinity and flooding could displace millions in Bangladesh.

5.4.4 Adaptation

The 2007 droughts in parts of southern Africa reduced maize production by about 40% to 60%. A workshop of over 140 experts on Adaptation Planning and Strategies organized by the UNFCCC and FAO in Rome underlined the long-term implications of abnormal changes in air temperature and rainfall and the increasing frequency and intensity of drought and floods, mainly on the developing nations. Due to the melting of Himalayan glaciers, the Pakistani government established a high-level committee and a study center to study adaptation strategies, including developing efficient water management systems, raising mass awareness campaigns, and changing cropping patterns.

5.4.5 Migration

Increasing desertification of West Africa is forcing people to relocate, causing more conflict among communities. The executive director of UNEP warned that Africa's next major war might be over water, giving Burkina Faso as an example. The Conference of the Parties to the United Nations Convention to Combat Desertification (UNCCD COP8) noted that desertification affects more than 250 million people, and 1 billion more are at risk, and asked for increased and swift action. The Global Humanitarian Forum, to be launched on October 17, 2007, is being set up by former UN Secretary General, Kofi Annan, to address in a preventive and proactive way global refugee movements and humanitarian crises triggered mainly by climate change. Climate change is, "perhaps the single most important humanitarian challenge of years to come," says Kofi Annan. The forum will act as a catalyst among the different interest groups involved in international disaster relief and prevention: governments, aid agencies, the military, the business world and academics.

5.4.6 Post-Kyoto Negotiations

The UN's "The Future in our Hands: Addressing the Leadership Challenge of Climate Change", the largest-ever meeting of world leaders on climate change, was held on 24 September at the UN headquarters in New York, as a preamble to the UN high-level General Assembly, to set the stage for the December Bali negotiations on a post-Kyoto treaty to address climate change and GHG emissions. It addressed aspects related to adaptation, mitigation, technology, and financing. Participants agreed that a new treaty to address climate change was needed, and that the UNFCCC is the most appropriate forum to conduct the negotiations.

Meanwhile, the number of lawsuits dealing with global warming is increasing around the world. Environmentalists are hoping to increase pressure on policymakers and companies to change to more environment-friendly and low-GHG emission policies. Initiatives such as the Carbon Disclosure Project (which sent letters to 2,400 large firms around the world) are demanding that corporations be more transparent and accountable in disclosing their GHG emissions and their activities' impact on climate change.

Military Implications:

[Same as previous on similar issues and the implication on item 1 in this report] Increasingly more compelling evidence and warnings on climate change amplify international discourse and increase the emergence of international policies trying to tackle the causes and develop strategies to mitigate climate change effects. Hence, the military should be doing its part in reducing greenhouse gas emissions and preparing to help mitigate the human-made and natural catastrophes that could ensue.

Sources: (see a more expanded list in the [Appendix](#))

Africa flooding spreads, 22 countries hit: UN

http://www.terraily.com/reports/Africa_flooding_spreads_22_countries_hit_UN_999.html

Satellites witness lowest Arctic ice coverage in history

http://www.esa.int/esaEO/SEMYTC13J6F_planet_0.html

Climate change melting Kashmir glaciers: report

http://www.terraily.com/reports/Climate_change_melting_Kashmir_glaciers_report_999.html

UN climate change expert stresses dangers of inaction

<http://www.un.org/apps/news/story.asp?NewsID=23936&Cr=climate&Cr1=change>

Rising sea levels would submerge third of Bangladesh

http://www.terraily.com/reports/Rising_sea_levels_would_submerge_third_of_Bangladesh_999.html

Tuvalu about to disappear into the ocean

<http://www.enn.com/ecosystems/article/23020>

UN General Assembly—General Debate (25 September - 3 October 2007); Statements and Webcast

<http://www.un.org/webcast/ga/62/>

Living with climate change. Adaptation strategies needed to build resilience

<http://www.fao.org/newsroom/en/news/2007/1000654/index.html>

BURKINA FASO: Innovation and education needed to head off water war

<http://www.irinnews.org/Report.aspx?ReportId=74308>

Annan's humanitarian forum to start work in October

<http://www.iht.com/articles/ap/2007/09/17/europe/EU-GEN-Switzerland-Annans-Forum.php>

Ban Ki-Moon Convenes Largest-Ever Meeting Of Global Leaders On Climate Change

<http://www.un.org/apps/news/story.asp?NewsID=23926&Cr=climate&Cr1=change>

Climate change battle fought in courts

<http://www.ndtv.com/convergence/ndtv/story.aspx?id=NEWEN20070026821>

As the waters rise

http://www.economist.com/world/international/displaystory.cfm?story_id=9867337

Bush Prepares for 'Greenwashing' Climate Summit

<http://www.alternet.org/environment/63769/>

5.5 UNESCO Added 23 New Reserve Sites in 18 Countries

UNESCO added 23 new sites in 18 countries to the World Network of Biosphere Reserves that are managed on sustainable development principles to reduce biodiversity loss. Three countries join the global network—El Salvador, Qatar, and the United Arab Emirates. The new additions include 2 sites in each: Argentina, Canada, China, El Salvador, and Portugal, and 1 site in each: Australia, Chile, Costa Rica, Ecuador, Lebanon, Mexico, Federated States of Micronesia, Mongolia, Qatar, South Africa, Spain, United Arab Emirates, and Viet Nam. UNESCO's Man and the Biosphere (MAB) network now comprises 529 sites in 105 countries. [See also *New Sites Added to World's Protected Biosphere Reserves* in October 2006 and others on the same issue in previous environmental security reports.]

Military Implications:

[Similar to previous on the same issue] The military should keep up-to-date with the list of protected sites and plan any operations near them accordingly. Citing the Army's new *Strategy for the Environment*, the military should seek new opportunities to participate in dialogues among scientists, politicians, environmental NGOs, and economic decision-makers for improving biodiversity management strategies, as well as in planning its own operations.

Source:

Twenty-three new biosphere reserves join UNESCO's Man and the Biosphere (MAB) network
http://portal.unesco.org/en/ev.php-URL_ID=39480%26URL_DO=DO_TOPIC%26URL_SECTION=201.html

5.6 Nanotechnology Safety Issues

REFNANO: Reference materials for engineered nanoparticle toxicology and metrology addresses the potential role of reference materials in toxicology and metrology created by a team of UK scientists, commissioned by the UK Department for Environment, Food and Rural Affairs (Defra). It provides a prioritized list of reference materials relevant to nanotechnology, focusing on materials produced and used in the UK.

The Director of the Woodrow Wilson Center's Project on Emerging Nanotechnologies has indicated disappointment with a recent report, *Prioritization of Environmental, Health, and Safety Research Needs for Engineered Nanoscale Materials*, prepared by a working group of the Nanoscale Science, Engineering, and Technology Subcommittee (NSET), part of the federal government's National Science and Technology Council. The Director states, "Notably absent are important details like budget allocations, implementation time frames, and assigned responsibilities."

Military Implications:

Military personnel concerned with nanotech issues should review the information generated by such activities to improve military and contractor practices, as well as to assist and cooperate with the organizations working on those issues for enriching their studies.

Sources:

REFNANO: The UK-led initiative on Reference Materials for Nanotechnology

<http://www.safenano.org/REFNANOSHFeature.aspx>

REFNANO: Reference materials for engineered nanoparticle toxicology and metrology

<http://www.safenano.org/Uploads/REFNANOReport.pdf>

Prioritization of Environmental, Health, And Safety Research Needs For Engineered Nanoscale Materials; an Interim Document for Public Comment

www.nano.gov/Prioritization_EHS_Research_Needs_Engineered_Nanoscale_Materials.pdf

Lack of Government Risk Research Strategy Jeopardizes Success of Technology

www.nanotechproject.org/136

Item 6. Reports Suggested for Review**6.1 IISS's *Strategic Survey 2007* Warns of Global Security Implications of Climate Change**

Strategic Survey 2007 by the International Institute for Strategic Studies (IISS) is a comprehensive analysis of the world security situation in general and by region. The "Strategy Policy Issues" chapter includes 'Climate Change: Security Implications and Regional Impacts' and 'The Military Use of Space'. The report lists the effects of climate change and nuclear proliferation as being on a par with growing Islamist extremism as the biggest security threats. It warns that "Even if effective measures are adopted, there will still be unavoidable impacts on the environment, economies and human security"; and, unless the right preparedness actions are taken, global security consequences of climate change could be equal in disruption to those of nuclear war.

Military Implications:

Personnel with environmental security related responsibilities should read this document for new policy and training requirement implications.

Sources:

Strategic Survey 2007

<http://www.iiss.org/publications/strategic-survey-2007>

Global warming impact like "nuclear war" – report

<http://africa.reuters.com/top/news/usnBAN251297.html>

6.2 Trends of Energy Use in IEA Countries

The International Energy Agency's *Energy Use in the New Millennium: Trends in IEA Countries* is an analysis of trends in energy use and efficiency, as well as CO₂ emissions in IEA countries. It concludes that the rate of energy efficiency improvement is too slow compared to increasing energy demands and it should at least double for a sustainable energy future and reduced impact on climate change. Rich in indicators on current energy use and CO₂ emission patterns, the report is a good tool for policymakers for setting priorities for future actions.

Military Implications:

This is a good reference for those responsible for policies to improve military energy efficiencies around the world.

Source:

Energy Use in the New Millennium -- Trends in IEA Countries

<http://www.iea.org/w/bookshop/add.aspx?id=312>

6.3 U.S. Climate Change Science Program Progress Assessment

Evaluating Progress of the U.S. Climate Change Science Program: Methods and Preliminary Results by the National Research Council acknowledges advancements made by the CCSP in documenting and understanding global changes, but finds that more work is needed concerning regional impacts, human vulnerabilities, and mitigation and adaptation options, as well as improving communication with stakeholders and decision makers at all levels. Lack of adequate high-quality data from satellites—crucial to the advancement of climate change science—is identified as the single greatest threat to the future success of CCSP.

Military Implications:

Although military assets are probably being shared for this or similar work, it appears that even greater sharing is needed and should be offered.

Source:

Progress of U.S. Climate Change Science Program Evaluated

<http://www.nationalacademies.org/morenews/20070913.html>

6.4 Calendar with Environmental Deadlines Compliance

The 2008 Compliance Calendar by the Environmental Resource Center is an excellent tool summarizing the most important deadlines for compliance with U.S. environmental regulations and reporting. In addition to highlighting the deadlines, it also contains a summary of the most important environmental regulations and responsible organizations.

Military Implications:

Military personnel with environmental reporting responsibility, as well as Army contractors, should consider ordering the free calendar for its extremely useful functionality in helping achieve and maintain compliance with environmental regulations.

Sources:

New Calendar Ends Hunt for Environmental Deadlines

<http://www.emediawire.com/releases/2007/9/emw553751.htm>

Compliance Calendar 2008 http://www.ercweb.com/docs/compliance_calendar.pdf

Item 7. Other Environment-related Developments**7.1 US EPA recommendations for "Green Infrastructure"**

US EPA has a website for "green infrastructure," with information about improving relationships between the built and natural environments.

Military Implications:

Military personnel with installation planning responsibilities should visit this site for techniques in construction and remodeling that could be environmentally beneficial.

Source:

Green infrastructure

http://cfpub.epa.gov/npdes/home.cfm?program_id=298

7.2 NATO funds Environmental Security for Transition Countries' Universities

To improve university capacities to address environmental security problems in the transition countries, NATO is funding Susan Allen-Gil of Ithaca College to convene an advanced research workshop with colleagues in Canada, Israel, and the Ukraine, to be held in Kharkiv, Ukraine in May 2008. Leading thinkers and practitioners in higher education and environmental security will be asked to "identify the best academic approaches for training university students in transition countries to address issues of environmental security from an interdisciplinary framework."

Military Implications:

AEPI should contact Susan Allen Gil at Ithaca College, Ithaca, New York and consider attending the workshop and/or seeing that other relevant personnel have the opportunity learn from and contribute to the workshop experience. Similarly, contributing papers for the NATO Science Series, entitled "Rethinking Higher Education to Meet the New Challenges of Environmental Security" that will publish other papers from the workshop is an excellent opportunity for U.S. military experts to share lessons learned.

Source:

Susan Allen-Gil Receives NATO Grant To Perform International Environmental Security Research

<http://www.ithaca.edu/intercom/article.php/20070831145907677>

7.3 Environmental security among top three priorities in Australia-China talks

Among other things, China and Australia agreed during private talks during the September APEC meeting to cooperate on clean coal and nuclear energy to reduce greenhouse gas emissions. They plan to continue annual strategic security meetings including environmental security matters.

Military Implications:

Since China is a major user of energy and Australia is a major supplier of energy resources (uranium and liquid natural gas) input to and monitoring of the results of these annual talks should provide early indicators of changing emphases on environmental security in the Asian region.

Source:

Canberra, Beijing to hold annual security talks

<http://www.theaustralian.news.com.au/story/0,25197,22365307-21703,00.html>

APPENDIX

Reference Details

This Appendix contains expanded background information on some items.

Item 5. Updates on Previously Identified Issues

5.1 Nuclear Safety

Sources: (a more expanded list)

Improving the INES Scale

<http://www.iaea.org/NewsCenter/News/2007/ines.html>

International Nuclear Event Scale (INES)

<http://www-ns.iaea.org/tech-areas/emergency/ines.htm>

International Experts Explore Challenge of Abolishing Nuclear Weapons

http://www.wagingpeace.org/menu/programs/public-events/other/conf_challenge_2007_09_08.htm

Meeting the Challenge of Abolishing Nuclear Weapons

http://www.wagingpeace.org/articles/2007/09/17_krieger_meeting_the_challenge.php

The Imperative of Revitalizing Nuclear Disarmament

http://www.wagingpeace.org/articles/2007/08/24_imperative_of_revitalizing.htm

Statement to the Fifty-First Regular Session of the IAEA General Conference 2007 by IAEA

Director General Dr. Mohamed ElBaradei

<http://www.iaea.org/NewsCenter/Statements/2007/ebsp2007n014.html>

Secretary-General, in message, calls for rededication to ‘noble work’ of bringing Nuclear-test-ban into force

<http://www.un.org/News/Press/docs/2007/sgsm11157.doc.htm>

Scientific Forum

Global Challenges and the Development of Atomic Energy: The Next 25 Years

<http://www.iaea.org/About/Policy/GC/GC51/ScientificForum>

IAEA Illicit Trafficking Database (ITDB). Fact Sheet

http://www.iaea.org/NewsCenter/Features/RadSources/PDF/fact_figures2006.pdf

Nuclear Security Report 2007; Measures to Protect Against Nuclear Terrorism

http://www.iaea.org/About/Policy/GC/GC51/GC51Documents/English/gc51-15_en.pdf

Securing the Bomb 2007 http://www.nti.org/e_research/securingthebomb07.pdf

Nuclear Terror Remains Global Threat, Harvard Study Reports

http://www.nti.org/d_newswire/issues/2007_9_27.html#AFD60592

Report Cites Dangerous Gap in Efforts to Thwart Nuclear Terrorism; Calls for Urgent Global Campaign to Reduce the Risk

http://www.nti.org/c_press/release_stb07.pdf

IAEA Illicit Trafficking Database Releases Latest Aggregate Statistics

<http://www.iaea.org/NewsCenter/News/2007/itdb.html>

5.4 Climate Change

Sources: (a more expanded list)

Africa flooding spreads, 22 countries hit: UN

http://www.terraily.com/reports/Africa_flooding_spreads_22_countries_hit_UN_999.html

Africa flood crisis deepens

http://www.terraily.com/reports/Africa_flood_crisis_deepens_999.html

Satellites witness lowest Arctic ice coverage in history

http://www.esa.int/esaEO/SEMYTC13J6F_planet_0.html

Billions Committed for Environment at Clinton Global Initiative

<http://www.ens-newswire.com/ens/sep2007/2007-09-26-05.asp>

Melting Arctic Ice. CBC.ca, September 7, 2007 (Video runs 6:42 min.)

http://www.cbc.ca/national/blog/video/enviromentscience/melting_arctic_ice.html

Arctic Sea Ice News Fall 2007

http://nsidc.org/news/press/2007_seaiceminimum/20070810_index.html

Climate change melting Kashmir glaciers: report

http://www.terraily.com/reports/Climate_change_melting_Kashmir_glaciers_report_999.html

Climate change affecting Pakistan's environment: Faisal Saleh

http://www.dailytimes.com.pk/default.asp?page=2007%5C09%5C26%5Cstory_26-9-2007_pg7_45

UN climate change expert stresses dangers of inaction

<http://www.un.org/apps/news/story.asp?NewsID=23936&Cr=climate&Cr1=change>

Fight for the Top of the World

<http://www.time.com/time/world/article/0,8599,1663445,00.html>

Rising sea levels would submerge third of Bangladesh

http://www.terraily.com/reports/Rising_sea_levels_would_submerge_third_of_Bangladesh_999.html

Tuvalu about to disappear into the ocean

<http://www.enn.com/ecosystems/article/23020>

UN General Assembly—General Debate (25 September - 3 October 2007); Statements and Webcast

<http://www.un.org/webcast/ga/62/>

Pacific Ocean countries take part in UN meeting on tsunami preparations

<http://www.un.org/apps/news/story.asp?NewsID=23834&Cr=tsunami&Cr1=>

Living with climate change. Adaptation strategies needed to build resilience

<http://www.fao.org/newsroom/en/news/2007/1000654/index.html>

Immediate Action Crucial To Tackle Affects Of Global Warming, Un Official Warns

<http://www.un.org/apps/news/story.asp?NewsID=23750&Cr=climate&Cr1=change>

As Droughts Intensify, Water And Soil Management Vital To Ensure Food – UN

<http://www.un.org/apps/news/story.asp?NewsID=23805&Cr=drought&Cr1=>

UN conference recommends WMO climate workshop as a model for enhancing knowledge to combat desertification

http://www.wmo.ch/pages/mediacentre/press_releases/pr794_e.html

Living with climate change. Adaptation strategies needed to build resilience

<http://www.fao.org/newsroom/en/news/2007/1000654/index.html>

UN-backed workshop on climate change adaptation fosters policy exchange

<http://www.un.org/apps/news/story.asp?NewsID=23818&Cr=climate&Cr1=change>

BURKINA FASO: Innovation and education needed to head off water war

<http://www.irinnews.org/Report.aspx?ReportId=74308>

Environment: Parliaments Said to be "Weak" in Fighting Desertification

<http://www.ipsnews.net/africa/nota.asp?idnews=39242>

The eighth Conference of the Parties to the United Nations Convention to Combat Desertification (UNCCD COP8) kicked off on Monday in Madrid and will conclude on 14 September.

<http://allafrica.com/stories/200709040686.html>

Annan's aid forum tackles natural disasters

http://www.swissinfo.org/eng/front/detail/Annan_s_aid_forum_tackles_natural_disasters.html?siteSect=105&sid=8225163&cKey=1190040507000&ty=st

Climate change tops future humanitarian challenges: Annan

http://afp.google.com/article/ALeqM5jcSVcpfxl_Gb8aL1rNmai6Xh63_w

Annan's humanitarian forum to start work in October

<http://www.iht.com/articles/ap/2007/09/17/europe/EU-GEN-Switzerland-Annans-Forum.php>

Climate change affecting Pakistan's environment: Faisal Saleh

http://www.dailytimes.com.pk/default.asp?page=2007%5C09%5C26%5Cstory_26-9-2007_pg7_45

UN General Assembly—General Debate (25 September - 3 October 2007); Statements and Webcast

<http://www.un.org/webcast/ga/62/>

Ban Ki-Moon Convenes Largest-Ever Meeting Of Global Leaders On Climate Change

<http://www.un.org/apps/news/story.asp?NewsID=23926&Cr=climate&Cr1=change>

Summit-level dinner on climate change fosters shared commitment – Ban Ki-moon

<http://www.un.org/apps/news/story.asp?NewsID=23946&Cr=climate&Cr1=change>

Climate change: major economies meet in US

<http://www.hindu.com/thehindu/holnus/001200709230323.htm>

Climate change battle fought in courts

<http://www.ndtv.com/convergence/ndtv/story.aspx?id=NEWEN20070026821>

Heavy weather

http://www.economist.com/business/displaystory.cfm?story_id=9832854

As the waters rise

http://www.economist.com/world/international/displaystory.cfm?story_id=9867337

The Future in our Hands: Addressing the Leadership Challenge of Climate Change

<http://www.un.org/climatechange/2007highlevel/>

Bush Prepares for 'Greenwashing' Climate Summit

<http://www.alternet.org/environment/63769/>

New York, 24 September 2007 - Press Conference - High-Level Event on Climate Change with the Secretary-General, The President of Indonesia, and the Executive Secretary of the UN Framework Convention on Climate Change

<http://www.un.org/apps/sg/offthecuff.asp?nid=1082>